National Institute of Environmental Health Sciences

Improved water quality can ameliorate effects of climate change on corals

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Abstract:

The threats of wide-scale coral bleaching and reef demise associated with anthropogenic climate change are widely known. Moreover, rates of genetic adaptation and/or changes in the coral-zooxanthella partnerships are considered unlikely to be sufficiently fast for corals to acquire increased physiological resistance to increasing sea temperatures and declining pH. However, it has been suggested that coral reef resilience to climate change may be improved by good local management of coral reefs, including management of water quality. Here, using major data sets from the Great Barrier Reef (GBR), Australia, we investigate geographic patterns of coral bleaching in 1998 and 2002 and outline a synergism between heat stress and nutrient flux as a major causative mechanism for those patterns. The study provides the first concrete evidence for the oft-expressed belief that improved coral reef management will increase the regional-scale survival prospects of coral reefs to global climate change.

Source: Ask your librarian to help locate this item.

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Food/Water Quality

Food/Water Quality: Other Water Quality Issue

Water Quality (other): Sea surface temperature; Dissolved inorganic nitrogen (DIN)

Geographic Feature:

resource focuses on specific type of geography

Ocean/Coastal

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Australasia

Health Co-Benefit/Co–Harm (Adaption/Mitigation): ☑

specification of beneficial or harmful impacts to health resulting from efforts to reduce or cope with greenhouse gases

A focus of content

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Resource Type: ☑

format or standard characteristic of resource

Research Article

Resilience: ☑

capacity of an individual, community, or institution to dynamically and effectively respond or adapt to shifting climate impact circumstances while continuing to function

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Timescale: ☑

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content